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VOL. 57. No. 10.— MAY, 1922.

CONTRIBUTIONS FROM THE BERMUDA BIOLOGICAL STATION
FOR RESEARCH. No. 136.

ADDITIONS TO THE HYDROID FAUNA OF THE
BERMUDAS.

BY RUDOLF BENNITT.

(Continued from page 3 of cover.)

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BY RUDOLF BENNITT.

Received February 15, 1922.

Presented by E. L. Mark.

THE hydroids which have been studied in the preparation of this paper are from two sources, namely, the collection made by the writer during the summer of 1921, and those made at various times since 1903 by Dr. E. L. Mark and others in attendance at the Bermuda Biological Station. I am greatly indebted to Dr. Mark, both for having made my stay at Bermuda possible and for having given me the opportunity of examining for hydroid material his miscellaneous collections.

The only papers hitherto written on the Bermuda hydroids are by Congdon (1907) and Ritchie (1909). Congdon described 19 species, of which five (*Eudendrium hargitti*, *Clytia fragilis*, *Sertularella speciosa*, *Sertularia humilis*, and *Thyroscyphus intermedius*) are new. Several others, described by him as new, have been shown by later writers, notably Nutting and Fraser, to belong to already established species. Ritchie discusses the synonymy of one of the Bermuda campanularians, and extends the range of two "Challenger" hydroids from the West Indies to the Bermudas.

Fraser's paper (1912) on the hydroids of Beaufort, N. C., is also a valuable aid in the study of the Bermuda hydroids, since 21 species of the latter, or over half of the Bermuda forms, occur also in the Beaufort region. The strong affiliation of the hydroid fauna of the Bermudas with that of the West Indian region, already suggested by Congdon, is still more strikingly demonstrated by the species now reported from Bermuda; in all, 29 species are common to the two regions.

The distribution of the individual species found in Bermuda is shown in the following table:—

	Bermuda	Beaufort, N.C.	West Indies, Florida, etc.	South America	Eastern North America, north of Beaufort	Western North America	Arctic region	Western Europe	Mediterranean Sea	West Africa	South and East Africa	Indian Ocean	Australia, N Zealand, Oceania	Antarctic region	Bathymetrical Record (in fathoms)
<i>Bimeria humilis</i>	X		X		X			X							0-10
<i>Eudendrium hargitti</i>	X														0-10
<i>Eudendrium ramosum</i>	X	X	X	X	X	X	X	X	X	X	X		X	X	0-542
<i>Pennaria tiarella</i>	X	X	X		X										0-10
<i>Halecium bermudense</i>	X	X	X												0-10
<i>Halecium nanum</i>	X	X	X						X	X					0-10
* <i>Halecium tenellum</i>	X	X	X	X	X	X	X	X	X	X		X	X	X	0-235
<i>Campanularia marginata</i>	X		X									X			0-440
* <i>Campanularia raridentata</i>	X	X			X	X	X	X	X	X		X	X		0-250
* <i>Clytia bicophora</i>	X				X										0-10
* <i>Clytia cylindrica</i>	X				X	X									0-25
<i>Clytia fragilis</i>	X		X												0-14
* <i>Clytia johnstoni</i>	X	X	X		X	X	X	X	X	X		X	X		0-100
<i>Clytia noliformis</i>	X	X	X		X			X				X	X		0-10
* <i>Obelia geniculata</i>	X	X	X	X	X	X					X	X	X	X	0-42
<i>Obelia hyalina</i>	X	X	X	X				X		X		X			0-68
<i>Lafoea venusta</i>	X		X									X			30-324
<i>Hebella calcarata</i>	X	X	X					X		X	X	X			0-122
<i>Sertularella speciosa</i>	X														0-1
* <i>Sertularella tenella</i>	X		X	X	X	X	X	X			X	X	X	X	0-103
<i>Sertularia brevicystus</i>	X	X						X		X			X		0-15
* <i>Sertularia cornicina</i>	X		X		X	X	X						X		0-8
<i>Sertularia aestuaria</i>	X														0-10
* <i>Sertularia stookeyi</i>	X	X	X												0-10
<i>Sertularia versluysi</i>	X	X	X		X				X	X		X			0-30
<i>Thyrocyphus intermedius</i>	X														0-10
<i>Aglaophenia cylindrata</i>	X		X												21-30
* <i>Aglaophenia lophocarpa</i>	X		X			X									24-1181
<i>Aglaophenia minuta</i>	X	X	X												0-10
* <i>Antennularia pinnata</i>	X		X												0-100
* <i>Lytocarpus clarkii</i>	X		X												13-201
<i>Lytocarpus philippinus</i>	X	X	X	X					X		X	X	X		0-8
* <i>Monothea margaretta</i>	X	X	X					X	X	X	X				0-10
<i>Plumularia diaphana</i>	X	X	X		X			X	X	X			X		0-576
* <i>Plumularia corrugata</i>	X		X	X		X						X			0-130
* <i>Plumularia inermis</i>	X	X	X												0-10
* <i>Plumularia setacea</i>	X		X			X	X	X	X	X	X	X			0-106

* The first record of these species from Bermuda is contained in the present paper.

This paper records 37 species, including all the hydroids reported from Bermuda up to the present. Where both trophosome and gonosome have been adequately described elsewhere in readily available papers, as is nearly always the case, I have attempted no taxonomic discussion. References are given to the text and plates of the original description, and also to the standard works dealing with the hydroids of the American shores of the Atlantic, in many of which a more complete bibliography may be found. Similar references are given for the species which I have not seen, but which have been reported from Bermuda by Congdon and others.

Family BOUGAINVILLIDAE.

Genus BIMERIA.

Bimeria humilis Allman.

Allman, 1877, p. 8, pl. 5, figs. 3-4.

Congdon, 1907, p. 467, fig. 6.

Family PENNARIDAE.

Genus PENNARIA.

Pennaria tiarella McCrady.

McCrady, 1857, p. 51.

Hargitt, 1900, p. 387, 4 pls.

Hargitt, 1901, p. 311, figs. 8, 9.

Nutting, 1901, p. 337, fig. 14.

Congdon, 1907, p. 464.

Fraser, 1912, p. 355, fig. 12.

Pennaria tiarella is common on the buoys and reefs about Hamilton Harbor and Great Sound, and on the flats outside. Specimens examined showed as many as 17 filiform tentacles, confirming Congdon's belief that *P. symmetrica* (Clarke, 1879) of Cuba, which has 18 filiform tentacles, is identical with *P. tiarella*.

Stoloniferous reproduction was here observed for the first time in the family, and, so far as I am aware, for the first time in the whole group of Gymnoblastea. Well-marked stolons extend from the distal ends

of the stem and branches (Fig. 1); they are considerably larger than the parts from which they arise, anastomose freely, and have the same appearance, even to the exact color, as the normal hydrorhiza of *Pennaria*. The free ends of the stolons are somewhat knobbed, and along their course appear broken stumps, precisely like the base of the original stem. This colony was growing in a horizontal position on the under side of a floating buoy, and the stolons had grown along the bottom of the buoy, there to give rise to new colonies.

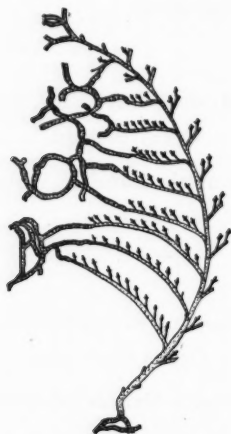


FIGURE 1. *Pennaria tiarella*. Colony showing stolon-formation. $\times 1\frac{1}{2}$.

Family EUDENDRIDAE.

Genus EUDENDRIUM.

***Eudendrium hargitti* Congdon.**

Congdon, 1907, p. 465, figs. 1-5.

Besides being extremely abundant in Hungry Bay, the shallow inlet on the south shore where it was found by Congdon, *E. hargitti* is generally distributed on buoys, timbers, ledges, and eel-grass all over Hamilton Harbor and Great Sound, just below low-tide mark. Congdon's specimens were 20-50 mm. high, and had 35-45 tentacles. Spec-

imens in my collection from Fairyland Creek reached a height of 80 mm., and the number of tentacles varied from 35 to 60. The distal hydranths are usually larger than the proximal.

Eudendrium ramosum (Linnaeus).

Tubularia ramosa, Linnaeus, 1767, p. 1302.

Eudendrium ramosum, Hargitt, 1901, p. 309, figs. 5, 6.

Eudendrium ramosum, Nutting, 1901, p. 332, fig. 7.

Eudendrium ramosum, Congdon, 1907, p. 464.

Eudendrium ramosum, Fraser, 1912, p. 349, fig. 8.

A few colonies, 50-75 mm. high, were found on a floating buoy in Hamilton Harbor.

Family **HALECIDAE**.

Genus **HALECIUM**.

Halecium bermudense Congdon.

Congdon, 1907, p. 472, figs. 16-20.

Fraser, 1912, p. 367, fig. 28.

Stechow, 1914, p. 134.

Stechow, 1919, p. 33.

This is one of the most abundant species in Bermuda, growing on a great variety of structures in almost every locality where hydroids are to be found. My specimens attained a height of 75 mm., Congdon's 25-35 mm.

Halecium nanum Alder.

Halecium nanum, Alder, 1859, p. 355.

Halecium marki, Congdon, 1907, p. 474, figs. 21-23.

Halecium nanum, Fraser, 1912, p. 367, fig. 29.

Halecium nanum, Stechow, 1914, p. 135.

Halecium nanum, Stechow, 1919, p. 36.

This minute species was often found on floating Sargassum; a few colonies were also found with *H. bermudense* on Pennaria from Cow-Ground Flat. The colonies reached a maximum height of 8 mm.; Congdon's specimens were $1\frac{1}{2}$ -3 mm. high.

Halecium nanum appears to have two modes of growth; the resulting

forms are shown to belong to the same species by the presence of the characteristic female gonosome on both. One form is short and scrubby, the other longer and with a few irregular branches coming off just below the hydrophores. The trophosome of the latter variety agrees so well with what Fraser (1912, p. 368, fig. 30) doubtfully called *H. repens* Jäderholm, that I believe the two are identical, and that he observed this straggling variety of *H. nanum*.

***Halecium tenellum* Hincks.**

Hincks, 1861, p. 252, pl. 6, figs. 1-4.

Hincks, 1868, p. 226, pl. 45, fig. 1.

Nutting, 1901, p. 357, fig. 52.

Fraser, 1912, p. 369, fig. 31.

Stechow, 1919, p. 41.

A few colonies were found, in all stages of growth, on Sargassum at Somerset Bridge, the hydrorhiza forming an extensive network over an alga. The gonosome, essential for a satisfactory determination of the species, which Fraser failed to find in his Beaufort specimens, was present in the Bermuda material.

Family CAMPANULARIDAE.

Genus CAMPANULARIA.

***Campanularia marginata* (Allman).**

Obelia marginata, Allman, 1877, p. 9, pl. 6, figs. 1, 2.

Campanularia insignis, Congdon, 1907, p. 469, figs. 10, 12.

Leptoscyphus insignis, Ritchie, 1909, p. 3.

Campanularia marginata, Nutting, 1915, p. 44, pl. 6, figs. 5-7.

***Campanularia raridentata* Alder.**

Alder, 1862, p. 315, pl. 14, fig. 5.

Fraser, 1912, p. 357, fig. 14.

Nutting, 1915, p. 39, pl. 4, fig. 1.

A single small colony of two or three individuals was found on floating Sargassum. Identification is somewhat doubtful, owing to the absence of the gonosome, but the trophosome agrees in every way with Nutting's description. The ten pointed teeth, the 3-5 annula-

tions at the ends of the pedicel, the tubular hydrotheca, and the considerable variation in the height of the pedicel, together seem sufficient to place the Bermuda specimen in this species.

Genus *CLYTIA*.

***Clytia bicophora* Agassiz.**

Agassiz, L., 1862, p. 304, pl. 29, figs. 6-9.

Nutting, 1901, p. 343, fig. 21.

Nutting, 1915, p. 56, pl. 12, figs. 1-3.

Fraser and many other writers consider *Clytia bicophora* identical with *C. johnstoni* (Alder). Nutting, with some hesitation, regards it as a separate species, on the basis of the following points: 1) the tenuity of the hydrothecal wall; 2) the smaller size of the hydrotheca; 3) the presence of a simple instead of a complex diaphragm. My specimens of *C. bicophora*, found growing on *Pennaria* from Cow-Ground Flat, have hydrothecae which are distinctly smaller than those of *C. johnstoni*, and show many cases of the collapsed hydrothecal wall. They also have only 12 marginal teeth, and there are annulations in the middle of the pedicels, which are sometimes annulated throughout. None of my specimens of *C. johnstoni* show these features, and I have found no stages intermediate between the two; this seems sufficient to establish *C. bicophora* as a separate species.

***Clytia cylindrica* Agassiz.**

Agassiz, L., 1862, p. 306, pl. 27, figs. 8, 9.

Nutting, 1901, p. 342.

Fraser, 1912, p. 358, fig. 16.

Nutting, 1915, p. 58, pl. 12, figs. 6, 7.

A few colonies were found on Sargassum at Agar's Island, and on floating Sargassum off the north shore.

***Clytia fragilis* Congdon.**

Congdon, 1907, p. 471, fig. 13.

Nutting, 1915, p. 62, pl. 15, fig. 1.

A number of colonies, 10-12 mm. high, were found on Sargassum at Somerset Bridge. The gonosome was absent, but the trophosome is quite characteristic in this species.

***Clytia johnstoni* (Alder).**

- Campanularia johnstoni*, Alder, 1857, p. 36.
Clytia johnstoni, Hincks, 1868, p. 143, pl. 24, fig. 1.
Clytia grayi, Nutting, 1901, p. 344, fig. 23.
Clytia johnstoni, Fraser, 1912, p. 358, fig. 17.
Clytia grayi, Stechow, 1914, p. 128, fig. 5.
Clytia johnstoni, Nutting, 1915, p. 54, pl. 11, figs. 1-6.
Clytia johnstoni, Stechow, 1919, p. 43.

This was one of the commonest species on floating Sargassum. The characteristic annulated gonangia were extremely numerous in the specimens collected. In one colony a stolon twice as long as the pedicel extended out from the middle of the pedicel, establishing connection with the substratum. This is the first case of stolon-formation that I have seen in the genus *Clytia*. There were never less than 14 marginal teeth, and I found no cases of the collapsed hydrothecal wall; these points, with the greater size of the colonies, made them readily distinguishable from *C. bicophora*.

***Clytia noliformis* (McCrary).**

- Campanularia noliformis*, McCrary, 1858, p. 92.
Clytia noliformis, Nutting, 1901, p. 343, fig. 22.
Clytia simplex, Congdon, 1907, p. 472, figs. 14, 15.
Clytia noliformis, Fraser, 1912, p. 359, fig. 19.
Clytia noliformis, Nutting, 1915, p. 57, pl. 11, figs. 7-10.

Colonies of *Clytia noliformis* are very numerous on floating Sargassum. My specimens showed many intergradations between *C. simplex* as described by Congdon and *C. noliformis* as described by Nutting.

Genus OBELIA.***Obelia geniculata* (Linnaeus).**

- Sertularia geniculata*, Linnaeus, 1758, p. 812.
Obelia geniculata, Nutting, 1901, p. 351, fig. 38.
Obelia geniculata, Fraser, 1912, p. 362, fig. 23.
Obelia geniculata, Nutting, 1915, p. 73, pl. 18, figs. 1-5.

A few colonies were found on floating Sargassum.

Obelia hyalina Clarke.

Obelia hyalina, Clarke, 1879, p. 241, pl. 4, fig. 21.

Obelia hyalina, Congdon, 1907, p. 468, figs. 7-9.

Obelia congdoni, Hargitt, 1909, p. 375.

Obelia hyalina, Fraser, 1912, p. 363, fig. 24.

Obelia hyalina, Nutting, 1915, p. 76, pl. 18, figs. 6, 7.

This is one of the hydroids found most often on the floating *Sargassum*, and a number of colonies 2-3 cm. high were found on a fish-car at Agar's Island. There were many cases of stolon-formation from the ends of the branches, and in one case these stolons were thickly intertwined with similar stolons of *Aglaophenia minuta*. *Obelia hyalina* often grows far out on colonies of *Sertularia stookeyi* no larger than itself.

Family LAFOEIDAE.

Genus LAFOEA.

Lafoea venusta Allman.

Allman, 1877, p. 11, pl. 6, figs. 3-4.

Ritchie, 1909, p. 260.

Specimens of *Lafoea venusta* were dredged by the "Challenger" "off the Bermudas, 30 fathoms."

Family HEBELLIDAE.

Genus HEBELLA.

Hebella calcarata (A. Agassiz).

Lafoea calcarata, A. Agassiz, 1865, p. 122.

Lafoea calcarata, Hargitt, 1901, p. 387, fig. 24.

Hebella calcarata, Nutting, 1901, p. 353, fig. 56.

Lafoea calcarata, Congdon, 1907, p. 467.

Hebella calcarata, Fraser, 1912, p. 371, fig. 34.

Family SERTULARIDAE.

Genus SERTULARELLA.

Sertularella speciosa Congdon.¹

Congdon, 1907, p. 476, figs. 24-28.

Sertularella tenella Alder.

Alder, 1857, p. 23.

Hartlaub, 1901, p. 63, Taf. 5, figs. 21-24, Taf. 6, figs. 2, 4, 7, 9, 10.

Nutting, 1904, p. 83, pl. 18, figs. 1, 2.

A large number of colonies, about 9 mm. high (Nutting's specimens were 12.5 mm. high), were found among branching Bryozoa in a collection made in 1903 by Dr. A. W. Weyse. The trophosome agrees in every way with that described by Nutting and by Hartlaub; occasional branches are given off at right angles to the stem, and the hydrothecal walls may be nearly smooth or may have six or seven well-marked annulations. The gonangia are one and a half to two times the length of the hydrothecae.

Genus SERTULARIA.

Sertularia brevicyathus (Versluys).

Desmoscyphus brevicyathus, Versluys, 1899, p. 40, figs. 9, 10.

Sertularia brevicyathus, Nutting, 1904, p. 60, pl. 6, figs. 1, 2.

Sertularia brevicyathus, Congdon, 1907, p. 481.

Numerous colonies of this little *Sertularia* were found on a gorgonian stem and on algae dredged in 1903 at four stations on the Challenger Bank, about 15 miles southwest of Bermuda, in 31-70 fathoms. Others were collected on Sargassum near Agar's Island.

Sertularia cornicina (McCrady).

Dynamena cornicina, McCrady, 1858, p. 102.

Sertularia complexa, Nutting, 1901, p. 360, fig. 57.

Sertularia cornicina, Nutting, 1901, p. 359, fig. 56.

Sertularia cornicina, Nutting, 1904, p. 58, pl. 4, figs. 1-5.

Sertularia cornicina, Fraser, 1912, p. 374, fig. 38.

Sertularia cornicina was found on the ledges and on Sargassum at both Agar's Island and Somerset Bridge, also on a gorgonian dredged in 32 fathoms on Challenger Bank. The latter specimens showed the formation of unusually long stolons from the tip of the colony back to the hydrorhiza. No sign of the often epizoic *Hebella calcarata* was seen.

***Sertularia aestuaria* Stechow.**

Sertularia humilis, Congdon, 1907, p. 479, figs. 29-32.

Sertularia aestuaria, Stechow, 1919, p. 157.

This very common sertularian frequently formed thick mats over the ledges at about the low-tide mark in practically all the localities visited. The specific name *humilis* was used in 1879 by Armstrong (Jour. As. Soc. Bengal, vol. 48, p. 101, tab. 9) for *Desmoscyphus humilis* of the Indian Ocean, and Stechow has suggested for Congdon's *S. humilis* the name *S. aestuaria*, descriptive of its habitat at tide-level.

***Sertularia stookeyi* Nutting.**

Nutting, 1904, p. 59, pl. 5, figs. 6, 7.

Fraser, 1912, p. 375, fig. 39.

A large number of colonies, with gonangia, were taken on floating Sargassum both off the north shore and in Hamilton Harbor. In many cases there was profuse growth of stolons from the extremities.

***Sertularia versluysi* Nutting.**

Desmoscyphus gracilis, Allman, 1888, p. 71.

Desmoscyphus inflatus, Versluys, 1899, p. 42.

Sertularia versluysi, Nutting, 1904, p. 53, pl. 1, figs. 4-9.

Sertularia versluysi, Congdon, 1907, p. 481.

Sertularia versluysi, Fraser, 1912, p. 375, fig. 40.

Genus THYROSCYPHUS.

***Thyroscyphus intermedius* Congdon.**

Congdon, 1907, p. 482, figs. 33-36.

Family PLUMULARIDAE.

Genus AGLAOPHENIA.

Aglaophenia cylindrata Versluys.

Versluys, 1899, p. 49, figs. 19-21.

Ritchie, 1909, p. 261.

Specimens of *Aglaophenia cylindrata* were dredged by the "Challenger" "off the Bermudas, 30 fathoms." The species is very similar to *A. rhyncocarpa* Allman, being separated from it by differences in the corbulae.

Aglaophenia lophocarpa Allman.

Allman, 1877, p. 41, pl. 24, figs. 1-4.

Nutting, 1900, p. 92, pl. 18, figs. 6-8.

Several immature colonies, about 25 mm. high, were found on the stem of a large colony of *Lytocarpus clarkii*, dredged in 32 fathoms on Challenger Bank. The gonosome was absent, but the complex trophosome is sufficient for identification.

Aglaophenia minuta Fewkes.

Fewkes, 1881, p. 132.

Nutting, 1900, p. 96, pl. 31, figs. 1-3.

Congdon, 1907, p. 483.

Fraser, 1912, p. 378, fig. 43.

There is a dense growth of this little plumularian on many pieces of floating Sargassum; specimens have also been found at Agar's Island and among material dredged in 32 fathoms on Challenger Bank. The two nematophores noted by Congdon in the axil of each hydrocladium are mentioned in Nutting's description, though Congdon must in some way have overlooked this statement. No gonosome was found.

Genus ANTENNULARIA.

Antennularia pinnata Nutting.

Nutting, 1900, p. 71, pl. 5, figs. 5, 6.

Growing among encrusting Bryozoa on a floating buoy in Hamilton Harbor and reaching a height of 37 mm., were a large number of col-

onies of this hydroid, whose canaliculated coenosarc and unprotected gonangia place it in the genus *Antennularia*. The trophosome agrees with that described by Nutting for *A. pinnata*, except that I was able to find only one nematophore, instead of two, in the axil of each hydrocladium, and none at all on the stem, although Nutting states that they are "scattered over the stem."¹ There is also considerable disparity in size between my specimens and his, but this is not conclusive evidence of specific difference. Some of the colonies are sparsely branched, and the arrangement of the hydrocladia is invariably alternate or subalternate.

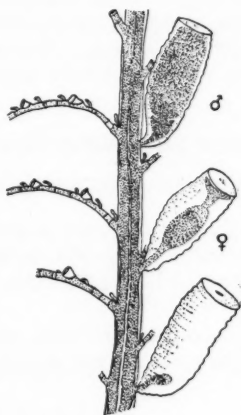


FIGURE 2. *Antennularia pinnata*. Portion of colony bearing male and female gonangia. $\times 12$.

The gonangia (Fig. 2) are unprotected, oblong-ovate, coarsely and irregularly annulated, about 20 times as long as the hydrothecae, with strictly terminal apertures, and are borne singly on short processes from the stem opposite the hydrocladia. Both male and female gonangia are found in the same colony. The female blastostyle bears usually a single gonophore, which is situated on one side. The male blastostyle is entirely surrounded by the mass of male reproductive cells. The position of the gonangia, their annulated walls, their

¹ Professor Nutting has kindly corroborated my identification of this species and of *Plumularia inermis*.

terminal apertures, and their comparatively large size, make this gonosome, previously undescribed, distinct from that of any other American species of *Antennularia*.

Genus *LYTOCARPUS*.

***Lytocarpus clarkei* Nutting.**

Nutting, 1900, p. 124, pl. 32, figs. 5-7.

Large colonies of *Lytocarpus clarkei*, measuring from 100 to 300 mm. in length, were dredged at five stations on Challenger Bank, in 31-70 fathoms. The gonosome is absent, but the trophosome agrees completely with that described by Nutting. The color of the perisarc in the preserved specimens varied from light brown to deep chocolate-brown.

***Lytocarpus philippinus* (Kirchenpauer).**

Aglaophenia philippina, Kirchenpauer, 1872, Pt. 1, p. 45, Taf. 1, 2, Taf. 7, fig. 26.

Lytocarpus philippinus, Nutting, 1900, p. 122, pl. 31, figs. 4-7.

Lytocarpus philippinus, Congdon, 1907, p. 484, fig. 37.

Lytocarpus philippinus, Fraser, 1912, p. 379, fig. 45.

Lytocarpus philippinus, Stechow, 1919, p. 132.

An immature colony, about 25 mm. high, was taken on Sargassum at Somerset Bridge. The gonosome was absent.

Genus *MONOTHECA*.

***Monotheca margaretta* Nutting.**

Nutting, 1900, p. 72, pl. 11, figs. 1-3.

Fraser, 1912, p. 380, fig. 47.

Several colonies in good condition, 6-12 mm. high, were found on floating Sargassum. The gonosome is unknown; the trophosome agrees in detail with that described by Nutting.

Genus *PLUMULARIA*.

***Plumularia diaphana* (Heller).**

Anisocalyx diaphanus, Heller, 1868, p. 42, tab. 2, fig. 5.

Plumularia alternata, Nutting, 1900, p. 62, pl. 4, figs. 1, 2.

Schizotricha tenella, Nutting, 1900, p. 80, pl. 4, figs. 4, 5.

Schizotricha tenella, Nutting, 1901, p. 365, fig. 70.

Plumularia alternata, Congdon, 1907, p. 484.

Plumularia alternata, Fraser, 1912, p. 381, fig. 48.

Schizotricha tenella, Fraser, 1912, p. 383, fig. 52.

Plumularia diaphana, Bedot, 1914, p. 89, tab. 5, figs. 14-16.

Plumularia diaphana, Stechow, 1919, p. 114.

Plumularia diaphana is rather common on floating Sargassum. Branches were observed in a few cases, though the colonies are nearly always unbranched. Stechow noticed that in many colonies the proximal three or four hydrocladia were paired instead of alternate; I find this to be almost universally the case in Bermuda specimens. The gonosome is unknown.

***Plumularia corrugata* Nutting.**

Nutting, 1900, p. 64, pl. 6, figs. 1-3.

A few colonies, 10-12 mm. high, were found on floating Sargassum. The gonosome was absent. The colonies were unbranched, and the stem showed a pair of internal ridges at both the proximal and distal end of each internode.

***Plumularia inermis* Nutting.**

Nutting, 1900, p. 62, pl. 5, figs. 1, 2, 2a.

Fraser, 1912, p. 382, fig. 50.

This delicate hydroid covered thickly a large area of eel-grass in the shallow water of Fairyland Creek; the colonies attained a height of 18 mm. The trophosome agrees with Nutting's description, except that the intermediate internodes are much more numerous than one would infer from his reference to their "occasional appearance," and there are often one or two short intermediate internodes between the proximal hydrotheca and the stem. The hydrocladia rarely bear more than three hydrothecae, and are often prolonged into stolons.

The gonosome, heretofore unknown, was found in abundance. The gonangia (Figs. 3, 4) are 20-30 times as long as the hydrothecae, unprotected, oblong-ovate, decidedly annulated throughout, and differing from those of all other American species of *Plumularia* in springing directly from the hydrorhiza. The colonies are dioecious; the female

blastostyle (Fig. 3) shows the thick, rounded "Deckenplatte" of ectodermal cells about the terminal orifice, and bears usually a single gonophore on one side; the male blastostyle (Fig. 4) is surrounded by a solid mass of sperm-producing cells.

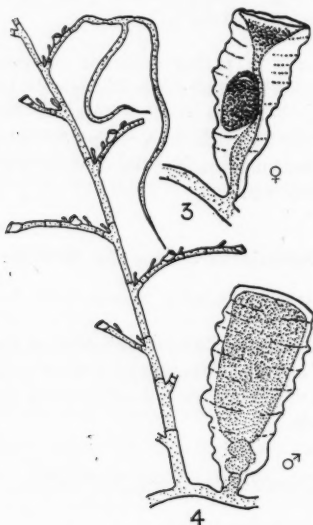


FIGURE 3. *Plumularia inermis*. Female gonangium. $\times 11$.

FIGURE 4. *Plumularia inermis*. Male gonangium and portion of colony, showing stolon-formation. $\times 11$.

***Plumularia setacea* (Ellis).**

Corallina setacea, Ellis, 1755, p. 19, pl. 11.

Plumularia setacea, Nutting, 1900, p. 56, pl. 1, figs. 1-4.

Several colonies of *Plumularia setacea* were found on *Sargassum*; in one group of colonies stolon-formation was extensive.

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